

REMARKS

Claims 1 to 30 are in the application. Claims 1, 11 and 21 are independent.

Favorable reconsideration and further examination are respectfully requested.

In the Office Action, claims 1, 11 and 21 were rejected under 35 U.S.C. §103 over U.S. Patent No. 5,786,822 (Sakaibara) in view of U.S. Patent No. 5,611,030 (Stokes) and U.S. Patent No. 6,201,549 (Bronskill)¹; claims 2, 3, 12, 13, 22 and 23 were rejected under §103 over Sakaibara in view of Stokes and U.S. Patent No. 5,847,712 (Salesin); claims 4, 14 and 24 were rejected under §103 over Sakaibara in view of Stokes and U.S. Patent No. 6,478,680 (Yoshioka); and claims 5 to 10, 15 to 20, and 25 to 30 were rejected under §103 over Sakaibara in view of Stokes, Yoshioka and U.S. Patent No. 5,757,321 (Billyard). As shown above, Applicants have amended the claims to define the invention with even greater clarity. In view of these amendments, withdrawal of the §103 rejections is respectfully requested.

Amended independent claim 1 defines a method of rendering a pencil-sketch image from three-dimensional data. The method includes determining a pencil-sketch texture for a polygon defined by the three-dimensional data. The pencil-sketch texture is comprised of tiles. Determining the pencil-sketch texture comprises obtaining texture values for vertices of the polygon and, in a case where all vertices do not have the same texture value, assigning the pencil-sketch texture to the polygon based on a texture value of a majority of

¹ It is noted that the rejections of the dependent claims do not mention Bronskill. Since the independent claims were rejected over Bronskill, it is assumed that the rejection over Bronskill also applies in the rejections of the dependent claims.

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the vertices of the polygon. The method also includes projecting the polygon onto a two-dimensional surface, and mapping the pencil-sketch texture onto the polygon to render the pencil-sketch image. The mapping comprises arranging the tiles so that there is substantial continuity between pencil-sketch markings in selected tiles. The substantial continuity is determined based on at least one of tangents to the pencil-sketch markings in the selected tiles and approximations of derivatives of the pencil-sketch markings in the selected tiles. The approximations are obtained by wrapping the pencil sketch marking in the selected tiles around edges of the selected tiles.

The applied art is not understood to disclose or to suggest the foregoing features of claim 1, particularly with respect to arranging tiles containing pencil-sketch markings so that there is substantial continuity between pencil-sketch markings in selected tiles, wherein the substantial continuity is determined based on at least one of tangents to the pencil-sketch markings in the selected tiles and approximations of derivatives of the pencil-sketch markings in the selected tiles, the approximations being obtained by wrapping the pencil sketch marking in the selected tiles around edges of the selected tiles.

More specifically, as correctly noted on page 5 of the Office Action, Sakaibara does not disclose pencil-sketch textures. Thus, as previously noted, Sakaibara could not possibly disclose or suggest the foregoing particularities associated with maintaining continuity between pencil-sketch markings on different tiles. Similarly, Stokes, which is concerned solely with color gamut mapping between different colors spaces, does not disclose or suggest the use of pencil-sketch texture, much less maintaining continuity

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between pencil-sketch markings on different tiles. Bronskill and Salesin were relied upon to make up for the deficiencies of Sakaibara and Stokes vis-à-vis pencil-sketch markings.

In this regard, column 9, lines 37 et seq. of Bronskill does describe testing continuity between two tiles based on the tangents or first derivatives of $(n)^{\text{th}}$ and $(n+1)^{\text{th}}$ Bezier curve pieces. What Bronskill does not disclose or suggest, however, is approximating the first derivative by wrapping pencil sketch marking in selected tiles around edges of the selected tiles. In fact, Bronskill makes no mention of how the first derivatives are obtained, much less approximated.

As previously noted, Salesin describes numerous examples of stroke-based images. As previously noted, Salesin does describe merging different strokes; however, Salesin is not explicit as to how continuity between the strokes is maintained (see, e.g., Fig. 3B, Fig. 5C, column 9, lines 33 to 36, and column 11, lines 59 to 67 of Salesin). Salesin does describe extending strokes to include a new stroke's pixels (see, e.g., column 14, lines 21 to 23) and clipping strokes to make them fit better into an image. However, Salesin does not mention determining substantial continuity based on at least one of tangents to pencil-sketch markings in the tiles and approximations of derivatives of the pencil-sketch markings in the tiles, much less a way of determining approximations of derivatives.

The remaining references, namely Yoshioka and Billyard, are not understood to disclose or to suggest anything that would remedy the foregoing deficiencies of Sakaibara, Stokes and Salesin against claim 1. Accordingly, claim 1 is believed to be allowable.

Amended independent claim 11 is an article of manufacture claim that roughly corresponds to claim 1; and amended independent claim 21 is an apparatus claim that

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roughly corresponds to claim 1. These claims are also believed to be allowable for at least the same reasons noted above.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' attorney can be reached at the address shown below. Telephone calls regarding this application should be directed to 617-521-7896.

No fee is believed to be due for this Amendment; however, if any fees are due, please apply them to Deposit Account 06-1050.

Respectfully submitted,

Date: _____

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